

PATENT SPECIFICATION

DRAWINGS ATTACHED

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1066,740



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COMPLETE SPECIFICATION

Adjustable Strap Connector

We, H. KOCK & SONS, INC., a corporation duly organized and existing under the laws of the State of California, United States of America, of Highway 101, Corte Madera, State of California, United States of America, do hereby declare the invention for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

This invention relates to belt or strap connectors.

Particularly it is the object of the invention to provide an adjustable fastener for harness webbing and the like wherein the connector is utilized to adjustably secure the free end of the harness webbing so as to fit or rig the harness to objects of various shapes and sizes.

The connector herein may be combined with other devices advantageously wherein adjustable tightness of connection is required.

An object of the invention is to provide a locking member in such connector which is surrounded by the webbing, threaded through the connector frame and around said locking member so that the load exerted on the connector tilts the locking member to firmly press the free end portion of the webbing against the connector frame and prevent slipping of the webbing as long as the connector is subjected to such load.

Another object of the invention is to provide such a tilting, locking member in a connector combined with resilient means to urge the locking member toward the end of the frame and against the webbing.

It is obvious that some changes may be made in the general arrangements and combinations of the several devices and parts, as well as in the details of the construction thereof without department from the scope of the present invention as set forth in the following

specification, and as defined in the following claims; hence the invention is not limited to the exact arrangements and combinations of the said device and parts as described in the said specification nor is it confined to the exact details of the construction of the said parts as illustrated in the accompanying drawings.

With the foregoing and other objects in view, which will be made manifest in the following detailed description, reference is had to the accompanying drawings for the illustrative embodiment of the invention, wherein:

Fig. 1 is a perspective view of the connector.

Fig. 2 is a front view of the connector with the resilient means shown in section.

Fig. 3 is a developed view of the parts of the connector.

Fig. 4 is a sectional view of an enlarged scale of the connector showing the webbing in released position for adjustment.

Fig. 5 is a sectional view of the connector on an enlarged scale showing the connector under load, the tilting of the locking member being somewhat exaggerated.

The parts of the connector, as shown in Fig. 3, include a generally rectangular frame 1 which has vertical sides 2 connected by a transverse end 3, a top transverse end 4 and an intermediate cross bar 6, spaced between the ends.

A locking member 7 extends transversely between the top end 4 and the cross bar 6. This locking member 7 is generally U-shaped and it has an elongated groove or recess 8 along its entire length formed between a lower longitudinal wall 9 and a higher longitudinal wall 11. The ends of the walls 9 and 11 extend beyond the ends of the recess 8 so as to slidably straddle the respective verti-

cal sides 2 of the frame 1. The inner faces of the walls 9 and 11 are tapered or rounded outwardly away from the recess 8 so as to facilitate the tilting and locking action of the locking member. The space 12 between the ends of the walls 8 and 11 is wider than the thickness of the adjacent vertical frame side 2 for facilitating the tilting and locking action of the locking member 7.

From each end of each wall 9 and 11 extends downwardly an abutment flange 13 and the bottom of the recess 8 is also flanged downwardly between the flanges 13 so as to define a channel 14 along the underside of the locking member 7 to accommodate a webbing 16 between the flanges 13 as shown in Figs. 1, 4 and 5.

The resilient urging means includes a saddle 17 which fits over the cross bar 6, spaced parallel flanges 18 projecting from the top of the saddle 17, a double coil spring 19 nested between said flanges 18, and a generally U-shaped follower 21 inverted and slidably fitting over the flanges 18 of the saddle 17 and also over the sides of the saddle 17 and resting on the spring 19. The free ends 22 of the coil spring 19 bear against the top wall of the follower 21 normally to urge it away from the cross bar 6 and toward the locking member 7. The top wall 23 of the follower 21 has a rectangular recess 24 in each end thereof which recesses slidably straddle the respective vertical frame sides 2. Thus the ends of the top wall 23 of the follower 21 bear against the lower edges of the abutment flanges 13. In this manner the locking member 7 is under resilient pressure at all times yet the webbing 16 is free to move between the follower 21 and the locking member 7 through the channel 14.

In operation the free saddle side 26 of the webbing is threaded between the follower 21 and the locking member 7 from under the higher wall 11 through the channel 14 then upwardly and around the lower wall 9 and back under the top end 4 of the frame 1 and then under the captive side of the webbing 16. The top end 4 of the frame 1 is tapered inwardly of the frame, as shown in Figs. 4 and 5, so that the sides 27 thereof converge toward the recess 18 in the locking member 7.

Another webbing 28 or other load bearing element is connected to the frame 1 to pull oppositely to the captive side of the webbing 16. For instance, the web 28 is doubled on itself around the lower frame end 3 and it is stitched into a loop.

When the frame 1 is under the load, namely pull is exerted on the lower end 3 and on the captive side of the webbing 16, then the pull exerted by such load forces the captive side of the webbing against the outer rounded lower corner 29 of the higher wall 11 and tilts the locking member 7 from the position shown in

Fig. 4 substantially to the angle shown in Fig. 5 so as to tilt the higher wall 11 toward the adjacent side of the top end 4. As a result, as long as the connector is under load exerting pull in opposite directions on opposite ends of the frame 1, the inner top edge 31 of the higher wall 11 presses against the adjacent portion of the free side 26 of the webbing and tightly grips the webbing between the tapered side of the top end 4 and the inner top edge 31 of the higher wall 11. The greater the load the tighter the gripping becomes so that slipping of the webbing is positively prevented.

In order to adjust the length of the webbing 16, the load is relieved on the frame 1, or the frame is held in hand so as to relieve the load, and by pulling on the free side 26 of the webbing, the force exerted on the lower corner of the lower wall 9 tilts the locking member 7 in clockwise direction viewing Fig. 5 so as to allow freeing of the web. If it is desirable to loosen the webbing, then the frame 1 is held to relieve the pull on the webbing 16 and then the captive end of the webbing is pulled through the channel 14 so as to lengthen it. During all these operations the bottoms of the flanges 13 are engaged by the respective ends of the top wall 23 of the follower 21 so as to resiliently urge the locking member 7 toward the top end 4 of the frame 1.

WHAT WE CLAIM IS:—

1. An adjustable connector for harness webbing and the like, comprising a frame, sides and transverse members connecting the sides and defining a webbing receiving opening in said frame, a webbing-gripping member extending across said frame parallel with the adjacent transverse frame members, and a pair of spaced parallel walls along said gripping member defining a recess therebetween facing one of said adjacent transverse members, one of said walls being higher than the other, whereby when the free side of said webbing is inserted from said higher wall and under gripping member and then around said lower wall and then between the top of said higher wall and said adjacent transverse member and out along the captive side of the webbing the pull of the load on said webbing exerts a gripping force against the lower portion of said higher wall so as to tilt said gripping member and press higher wall towards said adjacent transverse frame member for gripping the free side of the webbing with a force proportionate to the load on said captive side.

2. A connector as set forth in claim 1 including resilient follower means in said frame for normally urging said gripping member toward said adjacent frame member.

3. A connector as set forth in claim 1, in which the sides of said adjacent frame mem-

ber converge toward the space between said pair of spaced walls.

4. A connector as set forth in claim 1, including flanges which extend beyond the ends of said gripping member and straddle the respective frame sides for slidably and tiltably guiding said gripping member.

5. A connector as set forth in claim 1, in which flanges extend beyond the ends of said gripping member and straddle the respective frame sides for slidably and tiltably guiding said gripping member, and including spacer abutments projecting from said flanges, and guide means on said resilient means engaging the sides of said frame and abutting said abutments for providing a space between said abutments for the webbing.

6. An adjustable connector for webbing and the like, comprising a frame, sides and ends of the frame defining a webbing receiving opening in said frame, and a webbing gripping member extended across said frame parallel with the adjacent end of the frame and being slidably held on said sides, said webbing gripping member being of generally U-shaped cross section, the recess between the side walls thereof being wider than the width of said adjacent end and the recess between the walls of said U-shaped member facing toward said adjacent end, one side wall of said U-shaped member being higher than the other whereby when the free side of said webbing is inserted from under the higher side wall and under said gripping member and around the other side wall and then between said gripping member and said adjacent end and out along the captive side of the webbing, the pull on the captive side of the webbing tilts said gripping member thereby

to tilt said higher wall to grip the free side of the webbing against said adjacent end.

7. A connector as set forth in claim 6, in which the sides of said adjacent end converge toward the recess of said gripping member, and in which said side walls of said gripping member are tapered outwardly away from said recess.

8. A connector as set forth in claim 6, including a follower element which extends across said frame and is slidable along said sides, resilient means for urging said follower element toward said gripping member, and coacting abutment portions on the ends of said gripping member and said follower for spacing the portion of said gripping member between said sides from the adjacent portion of said follower to form a space for inserting the webbing.

9. A connector as set forth in claim 8, including a cross brace extending across said frame between the sides thereof, a saddle on the cross brace, and a longitudinal pocket on the top of said saddle, said follower straddling said pocket, said resilient means comprising a coil spring which is nested in said pocket and bears against said follower to urge said follower toward said gripping member.

10. An adjustable connector substantially as described and illustrated in the accompanying drawings.

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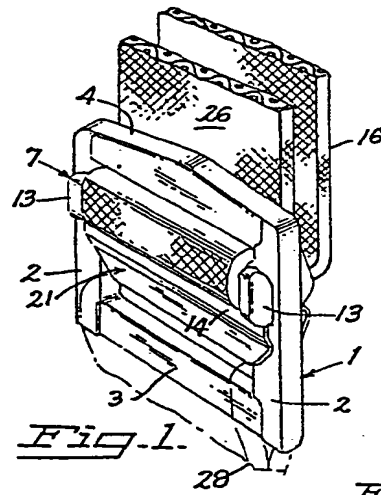


Fig. 1.

Fig. 3.

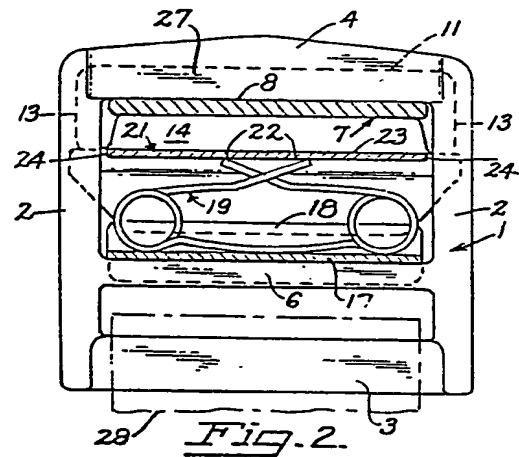
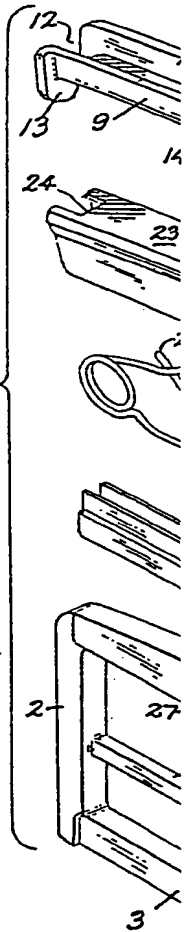


Fig. 2.



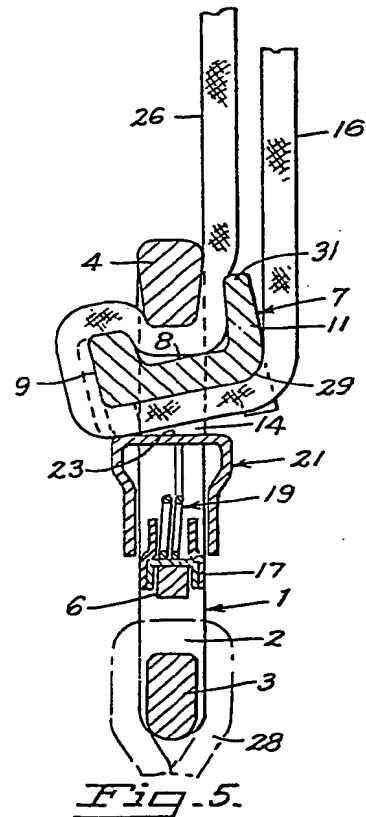
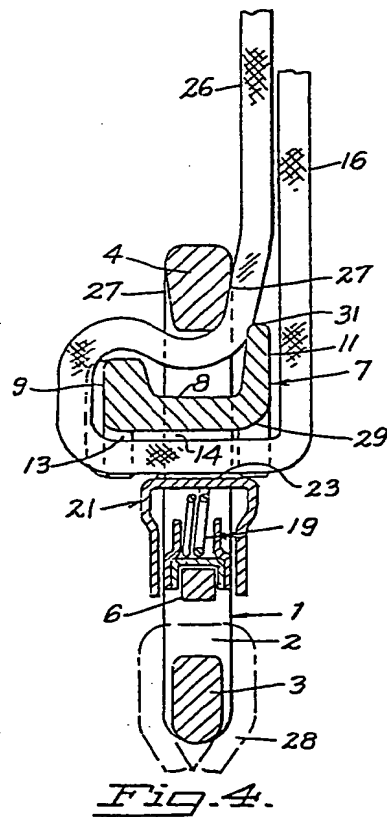
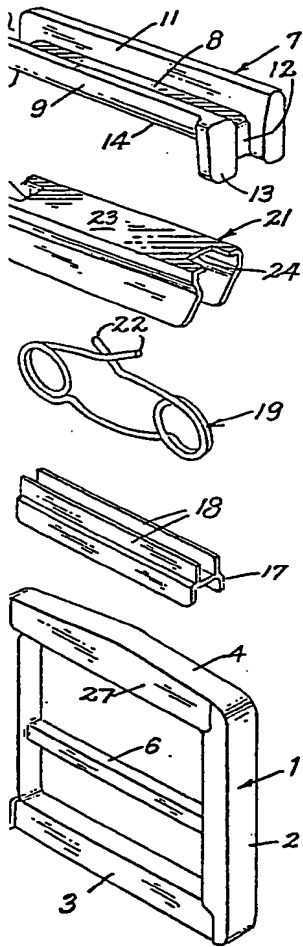
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COMPLETE SPECIFICATION

2 SHEETS

This drawing is a reproduction of the Original on a reduced scale

Sheets 1 & 2



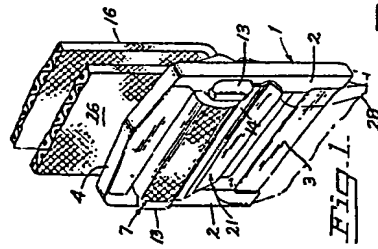


Fig. 1.

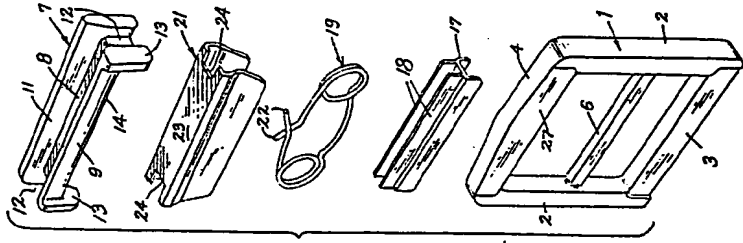


Fig. 3.

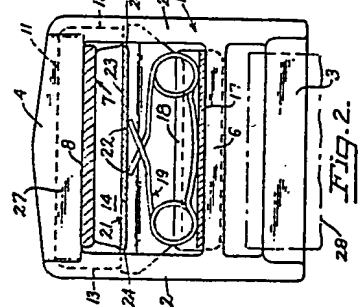


Fig. 2.

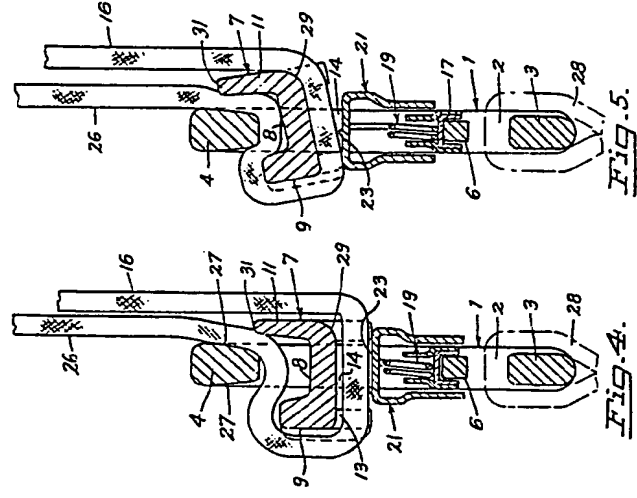


Fig. 4.

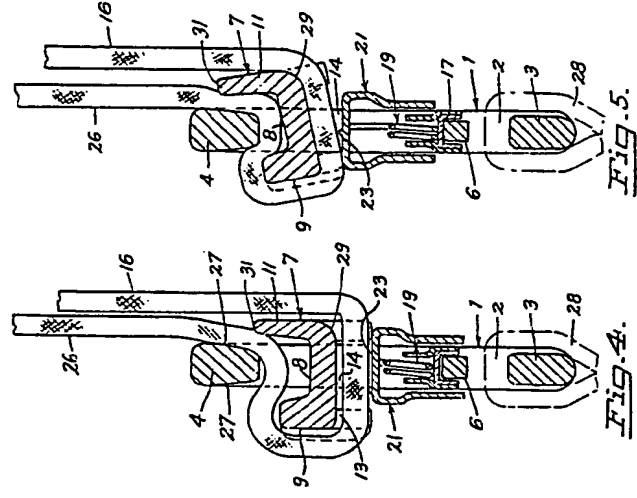


Fig. 5.